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PROVISIONAL APPLICATION COVER SHEET

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22984 U.S. PTO
60/601316
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☐ Additional inventors are being named on the separately numbered sheets attached hereto

TITLE OF THE INVENTION (280 characters max)

METHODS FOR IDENTIFYING MESSAGES AND COMMUNICATING WITH USERS OF A MULTIMODAL MESSAGE SERVICE

CORRESPONDENCE ADDRESS

Address all telephone calls and correspondence to:

Customer Number: 23377
WOODCOCK WASHBURN LLP
One Liberty Place - 46th Floor
Philadelphia PA 19103
Telephone No.: (215) 568-3100
Facsimile No.: (215) 568-3439

ENCLOSED APPLICATION PARTS (check all that apply)

☒ Specification Number of Pages: 14
☒ Drawing(s) Number of Sheets: 5

☒ Claims (optional)
☐ Other (specify)

METHOD OF PAYMENT (check one)

☒ \$80.00 Small Entity
☐ \$160.00 Large Entity

☐ A check or money order is enclosed to cover the Provisional filing fee:
☒ The Commissioner is hereby authorized to charge filing fee and credit Deposit Account No.: 23-3050
☒ The Commissioner is hereby authorized to charge Deposit Account No. 23-3050 any fee deficiency or credit account for any overpayment.

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No.

☐ Yes, the name of the U.S. Government agency and the Government contract number are

Respectfully submitted,

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PROVISIONAL APPLICATION FILING ONLY

METHODS FOR IDENTIFYING MESSAGES AND COMMUNICATING WITH USERS OF A MULTIMODAL MESSAGE SERVICE

FIELD OF THE INVENTION

[0001] The present invention relates generally to sending and receiving of short messages between wireless telephony users, and, more specifically the addition of speech capabilities to standard text messaging systems to create a Voice SMS service (which, in one embodiment, is referred to as Kirusa Voice SMS service, or KV.SMS, although references “Kirusa Voice SMS” or “KV.SMS” may be understood to mean any voice SMS service or related embodiment). Methods for uniquely identifying the messages and users in such a service assist in the efficient implementation and deployment of the service.

BACKGROUND OF THE INVENTION

[0002] In addition to the usual wireless telephony provided by cellular telephones, such devices are widely used to provide a standard ability to send short text messages (under the name Short Message Services or SMS) between wireless users.

[0003] More recently, new devices and supporting network services are being introduced that allow more general messages to be sent including voice, still images and even moving images. Standards have been introduced for such services including Multimedia Message Services (MMS) and Enhanced Message Services (EMS).

[0004] However, as attractive as such new services are to users and wireless network providers, they require new and expensive wireless devices, of which few have been deployed to

customers, as well as extensive additional network capabilities. Further, these new services do not inter-operate with existing SMS services in a seamless manner.

[0005] In view of the foregoing discussion, there is a need for a system that overcomes the drawbacks of these new services and provides comparable advanced capabilities that preferably use only the inexpensive devices and networks currently available to support standard text SMS and that, preferably, seamlessly inter-operate with standard SMS services. Further, it is desirable for such a system not to be limited to wireless phones, but to also work with wireline phones with SMS capabilities and services over such wireline devices.

[0006] A related service is described in U.S. Provisional Patent Application Serial No. 60/532,075, filed December 23, 2003, entitled "Techniques for Combining Voice with Wireless Text Short Messages." In order to implement this service further, it is desirable for there to be an ability to store and access the messages created by the service and to be able to intercept user SMS text messages for insertion of the additional information into the text messages to allow the service to operate.

[0007] Further, it is desirable that there be methods to provide inter-working with other services such as voice mail, Multimedia Messaging Service (MMS) and Instant Messaging (IM).

SUMMARY OF THE INVENTION

[0008] The present invention provides a Kirusa Voice SMS mechanism (KV.SMS) combining speech, or other modalities (such as image or video data), with standard text SMS. This mechanism allows users to send and receive voice messages associated directly with text SMS messages. The mechanism can be applied using standard wireless telephone devices capable of sending and receiving SMS text messages and can be extended to many other device types and network technologies.

[0009] An SMSC (Short Message Service Centre) or a similar processor (such as an MC, used in IS-41 networks or variations on such processors, e.g. those provided by BMD Wireless as part of their SMS message platform products) provides a standard mechanism for transmitting SMS text messages and can also be used to transmit or to insert the link into the text messages that allow connection to the speech server. The Multimodal Platform, which may be the Kirusa Multimodal Platform (KMP), provides control and synchronization of modalities as needed. KMP is known to those skilled in the relevant art, and is described in Kirusa, Inc. product briefs and detailed functionality is provided in several Kirusa, Inc. patents or pending patents.

[0010] In order to create a practical implementation of the Voice SMS service, it is desirable to provide the following features, which address presently outstanding issues:

1. an automatic and unique identification of each message stored at the Multimodal platform without requiring the user to manually select the message for retrieval and,
2. a method for inserting the required links into selected user text messages, allowing such retrieval, without requiring every text SMS message transiting the service network to be handled by the Kirusa platform.

[0011] To identify messages, each message is assigned a service identifier (e.g. a telephone number) which is combined with the unique identifier of the receiving user (e.g. that user's telephone number). It is possible to use only a limited number of such message service identification numbers (only the number of messages to be stored for each user) since the combination of the user identifier with one of the message identifiers (which can be same for each user) provides a fully unique message identifier. Since service identifiers can be a scarce resource in a telephone or data network this method allows scaling of the service usage indefinitely without requiring additional service identification numbers.

[0012] In order to insert the message identification links into the text SMS messages, the invention provides at least five example alternative mechanisms:

1. All voice messages are directly stored on the Kirusa Multimodal Platform (KMP) and the required link for retrieval is made a part of the text SMS, sent by the Platform, to the receiving user. In this example, it may be the case that no standard text SMS is sent directly from user-to-user as part of this service concept;
2. Each user of the service is assigned a virtual service identifier in addition to the standard identifier provided by the network (e.g. their telephone number). Messages sent to these virtual identifiers terminate on the Kirusa Platform where any required links may be inserted and the messages forwarded, with the link in place, to the standard identifier;
3. The platform target (e.g., SMSC) for the user's device automatically intercepts all incoming text SMS messages to the user and either inserts the required links itself or forwards the text SMS message to the KMP for modification;
4. The platform target for the user's device automatically intercepts all outgoing messages from the user and either inserts the required links itself or forwards the text SMS message to the KMP for modification; or
5. All SMS text messages within a service network are converted to Multimodal messages by insertion of a link to the Kirusa Platform.

[0013] Methods (1) and (5) are straightforward in implementation; however, methods (2), (3), and (4) (or others) may provide provide cost-effective solutions when (1) and (5) are not sufficient.

[0014] Additional the invention provides for the use of message centre filtering to identify off-network users of KV.SMS and to allow them to send Voice SMS messages; methods for inter-working with MMS (Multimedia Message Service) and methods for inter-working with other standard message systems such as voice mail or instant messaging (IM).

[0015] Other features of the invention are described below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The foregoing summary, as well as the following detailed description of the preferred embodiments, is better understood when read in conjunction with the drawings attached. For the purpose of illustrating the invention, exemplary construction of the invention is shown; however, the invention is not limited to the specific methods and instrumentalities disclosed. In the drawings:

[0017] Figure 1 is a flow and architecture diagram showing, by way of example, how a Kirusa Voice SMS (KV.SMS) is created by a user device, transmitted through the network and received by a second user device;

[0018] Figure 2 illustrates five example options for KV.SMS delivery and shows an exemplary implementation when the messages stored on the Kirusa Platform are voice messages;

[0019] Figure 3 shows a first option where all messages are stored on the Kirusa Platform. In this exemplary case messages are initiated as voice messages and all replies are made by voice. The Kirusa Platform sends text SMS messages to users to alert them to the presence of a message for them on the platform with a link to the voice message provided in the text SMS;

[0020] Figure 4 shows a second option where a user addresses SMS text messages to a virtual identifier (e.g. a virtual telephone number) which terminates on the Kirusa Platform. The Platform adds the required link to the text message and forwards it to the recipient;

[0021] Figure 5 shows a third option where all users of the service automatically connect (e.g. by changing the SMSC designation in their devices) to a special SMSC which inserts the required link into the text message;

[0022] Figure 6 shows a fourth option where all messages to users of the service automatically connect (e.g. by reprogramming the MC used in their devices) to a modified MC which inserts the required link into the text message;

[0023] Figure 7 shows a fifth option where all text SMS messages in the network (also addressed through a modified SMSC) are automatically converted into Multimodal SMS messages by insertion of the link to the Kirusa Platform;

[0024] Figure 8 shows how users of KV.SMS who are not using the primary host network may be allowed to send and receive KV.SMS messages using the Kirusa Platform. In this case each message is filtered (as is done already by products used in removing unwanted SMS messages – SPAM) to determine if the user is a KV.SMS subscriber;

[0025] Figure 9 is an exemplary structure showing how voice messages stored on the media platform are identified with a specific user. In this example, each message may be uniquely identified by combining a user identifier (e.g. the user telephone number, N1 through NK) with a message identifier (e.g. a number assigned from a small network pool, M1 through ML).

DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

Introduction

[0026] In order to provide access to the individual messages left for a user, it is desirable to be able to insert the appropriate network pool number into an SMS message sent to the user or received from the user. Depending on how the SMS message, informing the recipient that they have a voice message, is initiated, different methods for inserting the link may be necessary.

[0027] An exemplary overall architecture for transmission of KV.SMS messages is shown in Figure 1.

[0028] A user of the KV.SMS service, shown at the top of the figure, creates a voice message by calling the KMP directly, or replying to a previous KV.SMS or text SMS, and following the KV.SMS prompts to create a voice recording. After the recording is completed and stored at the KMP, a text SMS is sent to the recipient (bottom of the figure) notifying them that a voice message has been recorded and providing a link which can be activated to listen to the message. The text message may also contain additional content provided by the sender.

[0029] Figure 2 shows five (5) options for adding a link, into a text SMS message sent to or from a user of the KV.SMS service, back to the KMP allowing retrieval or recording of a voice message. In summary:

1. In option (1) a user creates a voice message by calling the KMP. The KV.SMS application then generates a text SMS (with optional user content) that has a link which when activated (e.g. by clicking on the phone number) allows the user's device to call the KMP and retrieve the voice message. Optionally, while retrieving the voice message the user can reply by voice continuing an exchange of voice messages under option (1). This option is shown in Figure 3.

2. In options (2), shown in Figure 4, in addition to the standard user identifier (e.g. the user's phone number) a second ('virtual') identifier (VMN, or virtual mobile number, in the exemplary figure) is supplied for the user. Text SMS messages sent to the VMN are intercepted and a link added to allow the user to contact the KMP and use the KV.SMS application to record a voice reply to the text SMS message.

3. In option (3), shown in Figure 5, the same operation as described in option (2) is accomplished by automatically intercepting all text SMS messages sent to a defined subset of users and the link to the KMP (a 'KV.SMS link') is added without the need for assigning a VMN to the user.

4. Option (4), shown in Figure 6, is similar to option (3) except that only outgoing messages from the defined subset of users are intercepted and the KV.SMS link added. Options (3) and option (4) can be combined to assure that, if desired, all messages to and from a defined subset of users will contain the KV.SMS link.

5. Option (5), shown in figure 7, converts user text SMS messages to KV.SMS messages by adding the KV.SMS links to all. This means that all text SMS messages can be replied to by voice using the KV.SMS application.

[0030] In addition, it is possible to add the KV.SMS link to messages originated by users from outside the host network (e.g. from a second telephony carrier). As shown in Figure 8, messages, from outside the network, are intercepted by a SMS filter and the KV.SMS link added.

[0031] The ideas summarized above are described in detail below. Prior to providing this detailed description, a method is described of identifying and storing voice messages created using the KV.SMS application. Such a method is shown in Figure 9 and described in the following.

Identification of Users and Modification of text SMS Messages:

[0032] Figure 9 is an illustration of an example method for identifying messages by combining a user identifier (N1 through NK for K users) with a network number (e.g. a telephone number, M1 through ML where L can be a relatively small number such as 100).

[0033] Each message left for a user is identified uniquely by combining the user identifier with one of the network identifiers. Only a small number of network identifiers are needed to provide for a reasonable number of messages stored for each individual user. For example, if 100 network numbers are provided, 100 messages can be stored for each user each of which can then be retrieved by that user as desired. The message can be retrieved based on the user's identification and the number of the message requested.

[0034] In this example if more than 100 messages are received by a user, the next message will then overwrite the first message in the sequence. This implementation is usually called a 'circular buffer' in the art. The size of the buffer is controlled by the size of the network number pool. Hundreds of numbers is a reasonable size of the pool providing sufficient temporary storage locations for a large number of voice messages for each individual user. In addition to overwriting messages in the circular fashion described above, it is also possible to use other criteria to determine which previous message to overwrite (e.g. which message was least recently accessed).

[0035] In one specific implementation, where the user's telephone number is the user identifier, this number can usually be determined automatically, using network Automatic Number Identification (ANI) a standard network function, without need for the user to provide any identifier as long as they are using the device to which the original message was directed.

[0036] If ANI is not available, or a user wishes to retrieve a message from another device with a different number, in a further inventive concept, the user can provide their original device number by manual entry (by voice or through a touch-pad or keyboard). Further security can be provided by adding some form of personal identification (PIN) number to the request.

[0037] Further, the specific message can be identified by associating the number supplied by the network pool with an actual telephone number. If the user dials this number to access their message the telephone system can automatically provide the dialed number to the application using called number identification (Dialed Number Identification System or DNIS).

[0038] The result of these two automatic procedures is that, if the user is provided with a link (e.g. within an SMS message) to the appropriate network pool number the application can identify the requested message completely automatically, without any user intervention, advantageously requiring the user to simply activate ('click') the link to access their message.

Conversion of Text SMS Messages to KV.SMS

Voice Initiated MV.SMS (Option '1')

[0039] In one example embodiment, illustrated by figure 3, the voice message may be initiated directly by another user who contacts the KMP by calling an assigned network number for the KMP and recording the message. In this case, the network pool number associated by KV.SMS with the recording can be added automatically to a text SMS message sent directly to the receiving user. In most cases, devices are capable of dialing a number within such an SMS message and the user can retrieve the voice message as described previously.

[0040] If said user then wishes to reply to the message by voice, after listening to it using the KMP and the KV.SMS application, exactly the same process is followed with the SMS message now sent to the originator of the first message with a link back to the newly created voice message assigned an appropriate number from the network pool for this user.

[0041] This process can be repeated indefinitely with no additional concepts required except that when the network pool is exhausted for one of the users the network pool numbers are reused and old messages are discarded as described above.

Use of Virtual Mobile Number by Users (Option '2')

[0042] In an additional example embodiment, it is desired that any KV.SMS user to whom a text SMS message is sent should be able to reply either by text or by voice. This requires adding a link to the KMP into all text SMS messages received by the KV.SMS user.

[0043] One method for accomplishing this is shown in Figure 4. Each KV.SMS user is assigned a unique 'virtual' number, different from and in addition to their standard user identifier (e.g. their telephone number). When an SMS message is sent to this virtual number, the SMS is received by the KMP, and the KV.SMS application associates the number with the recipient. The text SMS message is stored by the KMP with a number assigned from the network pool combined with the recipient's identifying number (advantageously their standard telephone number) to uniquely identify the message. A link to the network pool number is inserted into the text SMS message sent to the user so that the user can automatically reply to the message (and, if desired, have the text SMS message read back vocally using Text to Speech Synthesis, TTS) with a voice message.

[0044] Of course, the user can always reply to the text SMS with a direct text SMS of their own.

Interception of Incoming SMS messages (Option '3')

[0045] The assignment of special virtual numbers (VMN) is a useful idea but if there are a large number of subscribers this may not be practical. It is also advantageous if a user can be identified by a single number rather than having a virtual number in addition to their regular telephone number.

[0046] To expand upon the VMN concept all messages received by a defined subset of users can be automatically intercepted and the same processing provided for the VMN applied. As one exemplary implementation this can be done by programming the Message Centers (MC) in an IS-41 network to provide special handling of messages directed to specific users. Once

intercepted the appropriate KV.SMS link to the KMP may be added at the modified MC or the message can be forwarded to the KMP for modification by adding the KV.SMS link.

Interception of Outgoing SMS messages (Option '4')

[0047] In a manner analogous to the foregoing, it is possible to intercept all outgoing messages from a defined subset of users. This could be done just as described in Option 3 but it is also possible to use other mechanisms. One example is, in a GSM network, to reprogram the user device to target a specific special SMSC programmed to add the appropriate KV.SMS link.

Conversion of all Messages to KV.SMS (Option '5')

[0048] If there is no need or desire to define a subset of users it is possible, in accordance with the current invention, to intercept and modify all messages transmitted in the network. This can be done at the appropriate message centre (SMSC or MC) or by diverting all text SMS traffic to an instance of KMP.

Conversion of Messages from Off-Network to KV.SMS

[0049] If SPAM filtering (or some other network filtering mechanism) is enabled in a network, the same mechanism used for detecting SPAM can also be used to detect and intercept messages from off-network. These could then be rewritten with the KV.SMS link added for the desired users, and sent on their way.

Subscribers and non-subscribers

[0050] A further possible feature is providing different capabilities for 'subscribers' and 'non-subscribers.' A subscriber is a member of a subset of network users who the network carrier may designate for special services (for which a separate fee may be charged).

[0051] Some specific features associated with subscribers are:

- The initial sender of a KV.SMS should be a subscriber. The receiver of such a message may not be a subscriber. Storage for the voice and text SMS messages sent to the non-subscribing receiver is created dynamically with a possible limitation on size and on retention time (e.g. before the messages are removed from the server),
- A accounting system may track number of subscribed users, *and* the number of non-subscribed users receiving messages,
- When a subscriber is initially provisioned, they get a automatic 'welcome' KV.SMS, inviting them to activate a link in the message and record their name. This recorded name can then be associated with messages sent by this user in the future,
- KV. SMS messages can be sent to a group or a mailing list as desired. The

mailing list may be stored in the network or the user device or any combination,

- A mechanism can be provided to define groups and/or distribution lists,
- If desired (e.g. in a short text message or one containing only the link to the KMP) add, into the body of the SMS time of message (date), length of audio recording or other information helpful in identifying the message (e.g. the first few words of the original text message).

Inter-working with Voice Mail

[0052] The KV.SMS also allows, in one aspect, inter-working with standard voice mail systems. In particular the invention provides the ability, processes and methods to reply to a voice mail by SMS. As an exemplary implementation:

- A caller leaves voice mail (VM). When recorded the VM system automatically sends a KV.SMS to the VM user. That user and then click on KV.SMS link to hear the VM,
- When listening to VM the VM system can be modified to allow user to send a KV.SMS:

- This brings up a menu where the user can record a message,
- The message is then sent, to the person who left the voicemail, as a KV.SMS message,
- If the recipient has a mobile phone (or SMS-capable fixed phone), the message is sent as a KV.SMS,
- If the recipient has a fixed device without SMS capability, the message is delivered by making an automatic voice call to the fixed device.

[0053] It is also possible for KV.SMS to be modified to substitute for VM. In an exemplary implementation:

- When user A calls user B, and B does not pick up, the call goes to the KV.SMS number, and A can leave a KV.SMS message,
- B then gets a KV.SMS message (text SMS), and B can:
 - listen to message
 - reply to caller (by using reply feature of SMS, without having a double pin call architecture)
 - reply to the message by voice
 - reply to the message by text

[0054] These capabilities represent a completely new functionality that departs from currently available VM.

Inter-working with MMS:

[0055] There are two inventive aspects to inter-working of KV.SMS with MMS: conversion of MMS to KV.SMS and use of KV.SMS to send MMS messages to MMS users.

[0056] If a KV.SMS user wants to send an MMS message (e.g. to a user who prefers to receive MMS rather than SMS message) the KMP is notified and conversion to MMS is carried out transparently to the user by the platform. The KMP constructs a MMS message using the defined standards for MMS by combining any text portion of the KV.SMS and the voice portion, or other media material, into a single MMS construct which is then sent to the desired recipient.

[0057] If the KMP receives an MMS message for a KV.SMS user, the KMP divides the message into multimedia component parts (e.g. text, voice and image) and each part is sent in an appropriate manner to the KV.SMS user. As an exemplary implementation, the text portion is converted into a standard SMS text message with a KV.SMS link to the KMS media server so the user can retrieve the voice portion of the message. If there are other media present, links can also be presented to KV.SMS user and the other media retrieved using an appropriate device.

Inter-working with IM:

[0058] Many mobile IM services are based on SMS. If an IM is sent to a mobile device, it is delivered as an SMS. The mobile user then responds with SMS.

[0059] Pursuant to the KV.SMS inventive concept a KV.SMS link can be added to the SMS reply message.

[0060] The KMP detects the fact that the SMS is directed to an IM platform and automatically adds the KV.SMS link to the non-text portion of the message (e.g. a voice link). Since the IM platform is in the path of the messages anyway, no special addressing or modified SMSC/MC is required.

[0061] The voice reply is then delivered as a voice link or as a wav file to a desktop computer, and as a KV.SMS link if the recipient is a mobile phone.

Addressing of KV.SMS messages:

[0062] If a user wants to initiate a KV.SMS voice message, that message, once recorded, must be addressed to the recipient. There are at least three methods by which this may be done, which include:

1. The recipient's user designation (e.g. telephone number) can be entered,
2. A network address book (either a general address book provided by the network operator or one associated with KMP) can be used to enter the address either by searching on part of the number or by entering or searching on the recipient's name,

3. An SMS can be sent to the sender requesting that the sender enter recipient's address (e.g. telephone number). The number(s) may be entered using an address book on the user's device and sent as a reply (to the KMP) to the requesting SMS. Once received by the KMP the provided address is then used to send the KV.SMS to the desired recipient (or list of recipients).

[0063] In order to distinguish various KV.SMS messages received by a user an additional inventive idea is to add pieces of identifying information to the text SMS part of the KV.SMS. Exemplary implementations include adding the date and time of transmission; and/or several words from the initial text SMS message to form a 'pseudo-subject' for the message exchange.

[0064] It is noted that the foregoing examples have been provided merely for the purpose of explanation and are in no way to be construed as limiting of the present invention. While the invention has been described with reference to various embodiments, it is understood that the words which have been used herein are words of description and illustration, rather than words of limitations. Further, although the invention has been described herein with reference to particular means, materials and embodiments, the invention is not intended to be limited to the particulars disclosed herein; rather, the invention extends to all functionally equivalent structures, methods and uses, such as are within the scope of the appended claims. Those skilled in the art, having the benefit of the teachings of this specification, may effect numerous modifications thereto and changes may be made without departing from the scope and spirit of the invention in its aspects.

What is Claimed:

1. A method comprising:

receiving the text of a message to be sent via a text messaging service;
receiving information in a non-text mode that is to be sent with said message;
sending said message and an associated link which is usable by a recipient of said message to retrieve and/or render said information.

2. The method of claim 1, wherein said text messaging service comprises an SMS service.

3. The method of claim 1, wherein said non-text mode comprises an audio mode.

4. A computer-readable medium encoded with a plurality of data comprising:

text information in a format consistent with a text messaging service; and
a link which is usable by a recipient of said plurality of data, said link being displayable on a device at which said recipient receives said plurality of data, said link being activatable to allow said recipient to retrieve and/or render non-text information that is associated with said text information.

5. The computer-readable medium of claim 4, wherein said text messaging service comprises an SMS service.

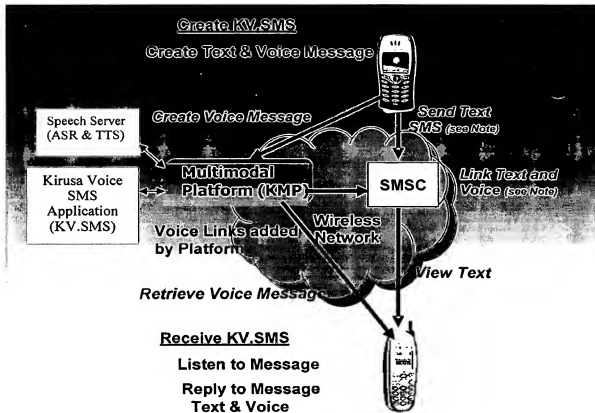
6. The computer-readable medium of claim 4, wherein said non-text information comprises audio information.

ABSTRACT

A method for identifying user messages and communicating with such users to create a multimodal SMS service. A user of standard SMS text service is provided with a link within each message that allows the user to add a voice message to a transmitted SMS text message or to retrieve a voice message associated with a received SMS text message. To uniquely identify the voice messages associated with a user, the link within the message uses one of a limited group of identifiers, which, when combined with a unique user identifier, allows each message directed to a given user to be retrieved. Insertion of the required link into the received SMS text message can be accomplished in a number of ways depending on the size of the user population and the specific SMS architectural implementation for a given service provider. Other aspects may include integration with voice mail so that replies can be made to a voice mail message using such Kirusa Voice SMS (KV.SMS). Methods for integration with MMS and with IM are also described. In addition, methods are defined which allow creation of addressing information by users and the addition of "pseudo-headers" to messages by extracting text information from a text SMS or from the voice part of a KV.SMS.

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Figure 1. Creation, transmission and reception of KV.SMS messages



Note: voice link in text SMS can be created at the device, or by using the Multimodal Platform to SMSC link, or by using a modified SMSC as described in the following figures.

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Figure 2. Kirusa Voice SMS Service Delivery Options

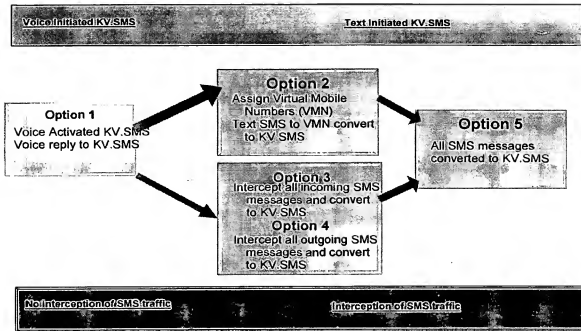
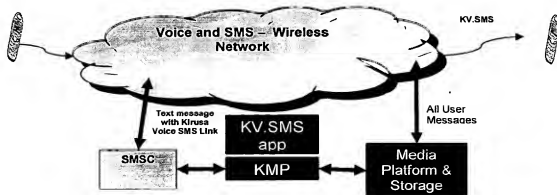


Figure 3. Option 1: All messages stored on Platform



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Figure 4. Option 2: Text SMS message sent to Virtual Number

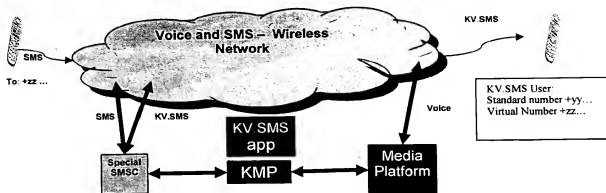
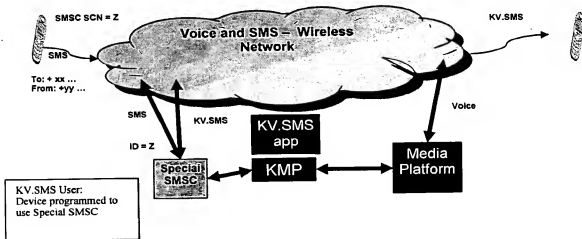


Figure 5. Option 3: Text SMS message sent to specific modified SMSC



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Figure 6. Option 4: Text SMS message sent to specific modified MC

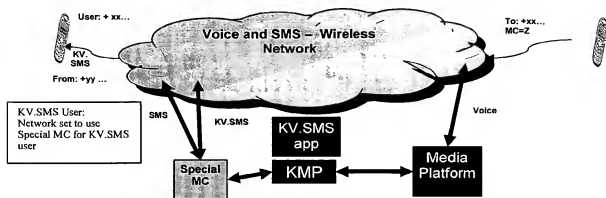
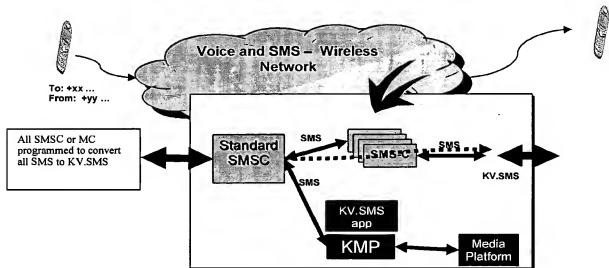


Figure 7. Option 4: All Text SMS messages converted to KV.SMS



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Figure 8. Connection to Users not in Host Service Network

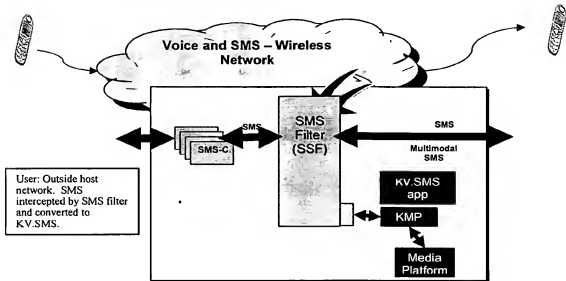


Figure 9. Identification of user messages.

